World Journal of Advanced Research and Reviews
eISSN: 2581-9615 CODEN (USA): WJARAI
Cross Ref DOI: 10.30574/wjarr
Journal homepage: https://wjarr.com/

(CASE REPORT)

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Astroblastoma: A rare glial tumour

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World Journal of Advanced Research and Reviews, 2024, 21(03), 1276–1281

Publication history: Received on 15 December 2023; revised on 26 February 2024; accepted on 29 February 2024

Article DOI: https://doi.org/10.30574/wjarr.2024.21.3.2646

Abstract

Background: They are rare glial tumors that share characteristics with astrocytomas, ependymomas and sometimes other glial neoplasms, and can be difficult to diagnose.

Method: We present the case of a 57-year-old female patient admitted with subacute headache, seizures, visual disturbances associated with 2/5 left hemiparesis for 2 weeks

Result: Cerebral MRI showed a voluminous left parietal-rolandic lesion with dual tissue and cystic components taking up contrast in a heterogeneous fashion, suggesting a cystic glioma or an atypical meningioma. The patient underwent total excision via a direct approach, with histological examination favouring an Astroblastomea proliferation Ki67 estimated at 10%, with postoperative follow-up radiotherapy. The patient is alive and being followed up at the consultation. The radiological and histopathological features and treatment of this case are described, with a review of the literature**.**

Conclusion: In addition to their own histological features, Astroblastomas share certain molecular and histological findings with other, possibly ontologically related, cortical-based gliomas, mainly in children and young adults. Importantly, the presence of BRAFV600E mutations in a subset of Astroblastomas suggests the potential clinical utility of targeted anti-BRAF

Keywords: Astroblastoma: A rare glial tumour; Patient; Ependymomas

1. Introduction

Astroblastoma is a rare neuroepithelial glial tumor representing less than 0.5% of all glial tumors. The characteristic histological pattern of astroblastoma consists of radially oriented neoplastic cells with unipolar cytoplasmic processes directed towards blood vessels. It mainly affects children, adolescents and young adults. Preferentially located in the supratentorial region. [1.]. This tumor is listed among the "other gliomas" in the WHO International Classification of Tumors of the Central Nervous System (updated 4th edition, 2016), those of uncertain origin, and does not have a grading[2]. Given its rarity, astroblastoma is often unrecognized and can pose a diagnostic problem. Moreover, few data are currently available on its histogenesis, therapeutic modalities and prognostic factors [3]. We report here the case of a prerolandic astroblastoma in a 57-year-old patient with subacute headache, convulsive seizures and left hemiparesis.

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1.1. Observation

A 57-year-old woman was admitted to the emergency department with subacute headache, partial seizures and vomiting. The history revealed a syndrome of intracranial hypertension, as well as a two-week history of decreased visual acuity associated with heaviness of the left hemisphere. Neurological examination revealed a conscious patient with GCS 15, and 2/5 left hemiparesis with no cranial pair involvement. Computed tomography (fig1) revealed a voluminous, heterogeneous right temporoparietal lesion with a double cystic and fleshy component, mass effect and peri-lesional edema compressing the right homolateral ventricles. Complementary magnetic resonance imaging showed a voluminous tumoral process in the right temporoparietal region, with a double cystic component and a large polylobed tissue component, well limited, with heterogeneous signal, enhancing after injection without diffusion restriction. The process is surrounded by peri-lesional edema, with deviation of midline structures and mass effect on the homolateral lateral ventricle, which appears laminated. (Fig. a, b,, c, et d). The patient underwent tumor resection. Histological examination was in favour of Astroblastoma with Ki67 proliferation index estimated at 10, with tumour proliferation arranged in pseudo-perivascular rosettes with a hyalinized fibrous appearance of the vessel wall without necrosis. The cytoplasm was eosinophilic, with rounded nuclei and no mitotic activity. Post-operative management was straightforward. A follow-up CT scan showed no tumour residue

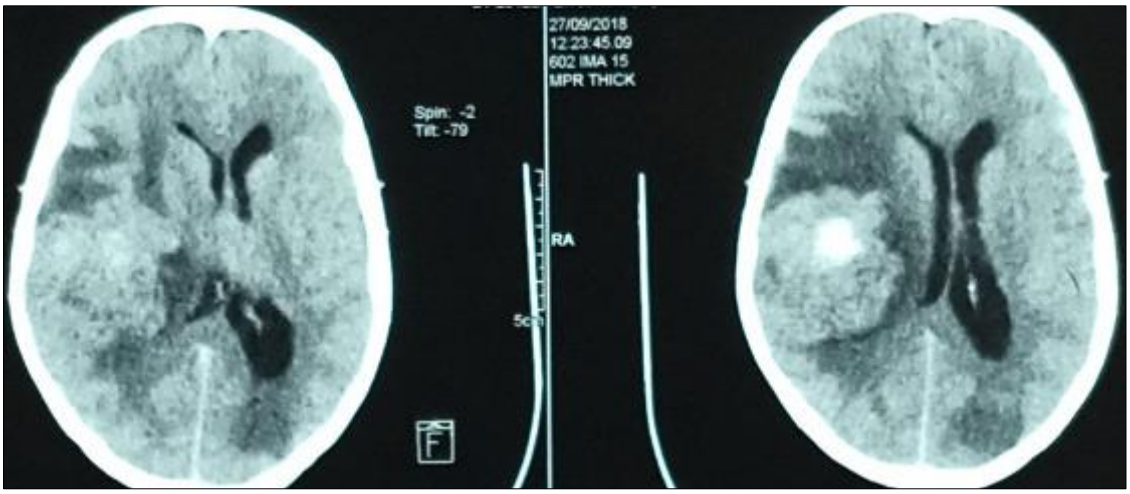

Figure 1 Cerebral CT scan in preoperative axial section showing a massive lesion in the pareietal region with perilesional oedema creating a huge mass effect and a deviation of the median line.

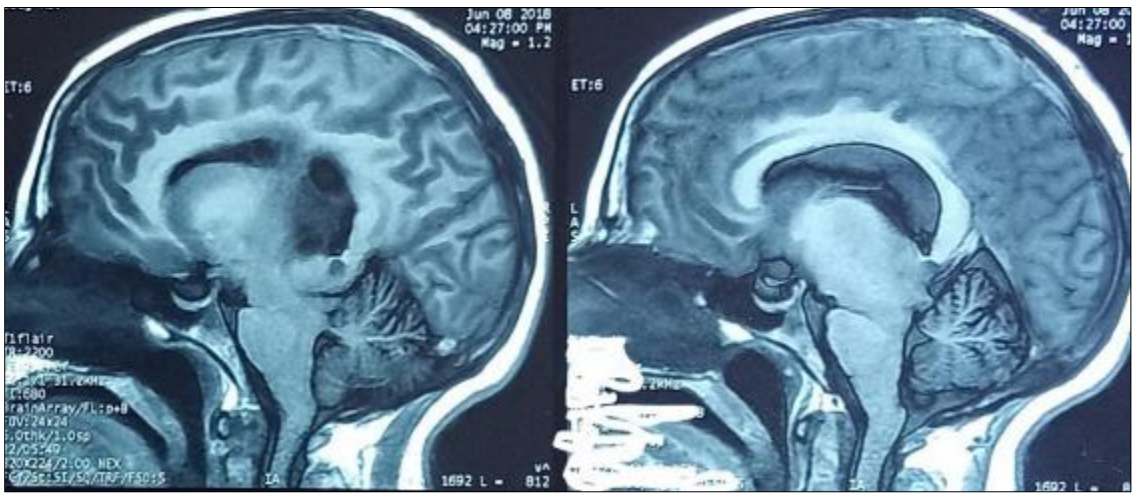

Figure 2 Non-injected T1 sagittal slice MRI scan

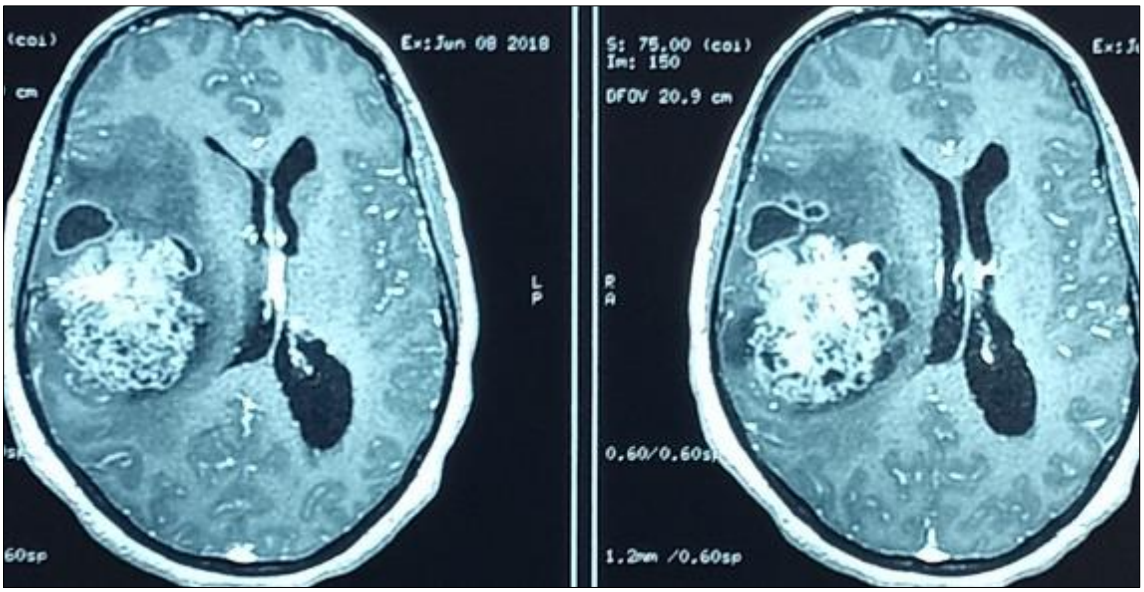

Figure 3 Injected T1 cerebral MRI showing a heterogeneous lesion with an associated cystic component taking the gado product in hypersignal, voluminous with a glove finger effect compressing the lateral ventricles.

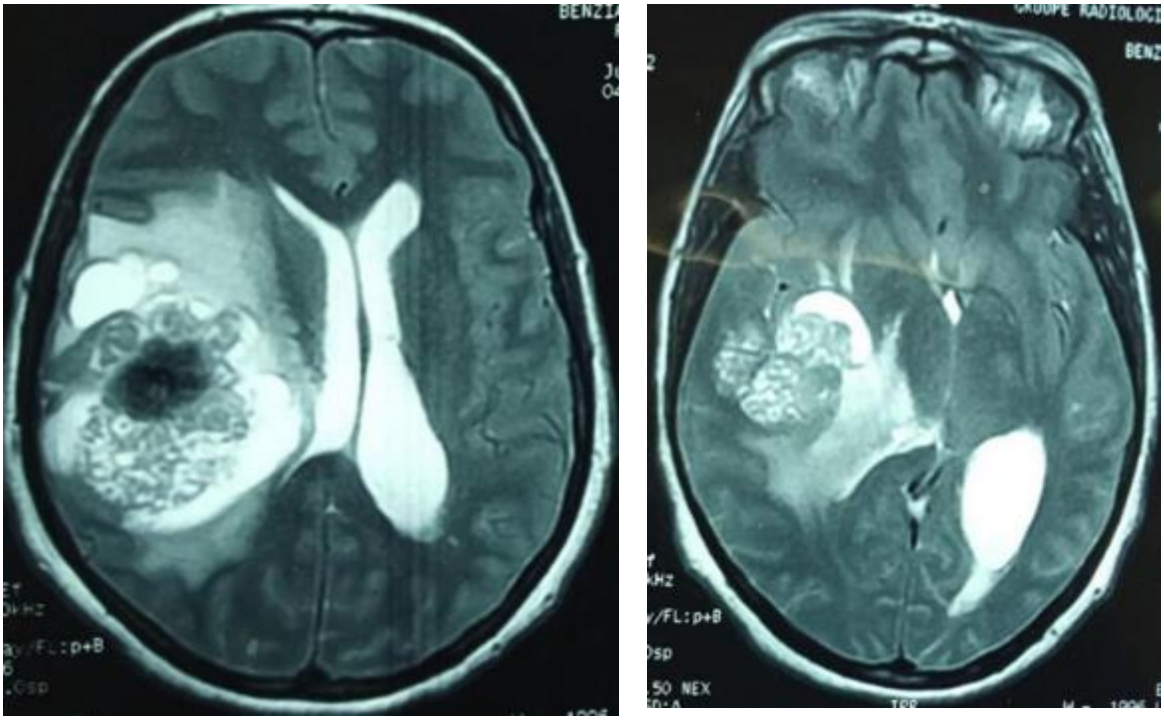

Figure 4 T2 sequence showing the heterogeneity of the lesion in hyposignal or centre associated with a cystic part with perilesional oedema, the deviation of the median

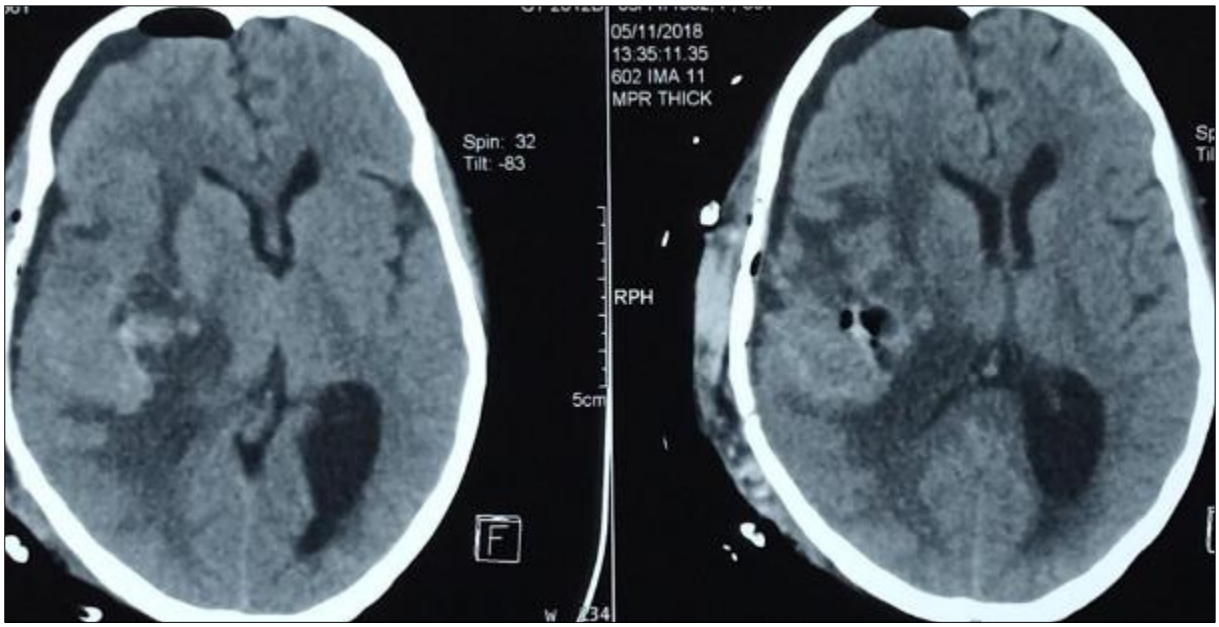

Figure 5 Postoperative control CT showing satisfactory excision of the lesion

2. Discussion

First reported in 1930 by Bailey and Bucy , astroblastoma is a rare glial tumor of the cerebral hemisphere. Its prognosis is intermediate between that of astrocytoma and glioblastoma. [3]. Its classification, histogenesis, diagnosis and therapeutic management are still the subject of debate. In the latest WHO classification of tumors of the nervous system [2]. Cerebral astroblastoma has been included in neuroepithelial tumors other than astrocytic, oligodendroglial or ependymal tumors. Most cases of astroblastoma have been described in young adults, although cases of congenital astroblastoma have been documented.([4, 7 (3)]. The clinical manifestation is fairly typical of expansive brain lesions exerting a mass effect: vomiting, headaches, seizures and loss of consciousness. Typical diagnostic features are young age and lesion location, since astroblastoma presents as an intra-axial peripheral supratentorial lesion, more frequently near the convexity, and more often involves the frontal and parietal lobes of a single hemisphere or hemisphere, or presents in a medio-sagittal site.[5, 6]. Neuroradiologically, astroblastoma presents as a well-circumscribed superficial lesion, most often in the cerebral hemispheres.([3, 5, 6, 7, 8]. It is heterogeneous with two components, solid and cystic, both of which take up contrast. [3, 5, 9]. Both lesions are discreetly and well delineated from the surrounding. [10]. On CT, the lesions are large masses, superficially, heterogeneously contrast-enhanced. [3, 6, 9, 11, 12, 13, 14, 15]

On MRI, the typical appearance of astroblastoma is that of a relatively large mass, a few millimeters in diameter. well circumscribed, lobulated, peripheral and typically supratentorial. Usually solid and cystic lesions. slightly contrast-enhanced and heterogeneous, and often includes the capsule/edge of cystic lesions. In general, there is no substantial difference between the appearance of high-grade and low-grade lesions, although the latter may have a very aggressive natural history.

Hypointense in TI. On T2, isointense in the solid zone of the lesion ([27(96)]. Contrast enhancement was heterogeneous throughout the lesion, with enhancement of the edges of the cystic parts of the tumor[6, 8, 16].

Spectroscopy and diffusion-perfusion diffusion-perfusion sequences can be useful in distinguishing low-grade [8, 17] ., but their role in the diagnostic and therapeutic process, while promising, is not yet well established.

Histopathologically, they show characteristic epithelioid cells with large tapered processes in a perivascular configuration, forming pseudorosettes of tumor cells around the vessels, as in ependymomas. [5, 14, 18, 19,]. However, these pseudorosettes do not contain fibrillar material in their cytoplasm. It is this absence of fibrillarity that distinguishes these pseudorosettes from those found in ependymomas. those found in ependymomas. [3,7].

Moreover, the cellular processes found in astroblastomas are shorter and wider than those found in ependymomas, making it possible to distinguish these two lesions histopathologically. In addition, there are rarefied spaces between the pseudorosettes, in contrast to the compact intravascular architecture of ependymoma. [3,14]. The distinct

histopathological features of astroblastomas are non-specific and can be found in a variety of astrocytic tumors such as GBM, ependymoma and primary neuroepithelial tumors. [7]

In the past, the discovery of this histology in other tumors delayed the classification of astroblastoma as a distinct entity. Today, the current literature supports the position that if these histopathological features are present in a specimen, the lesion can be classified as astroblastoma. However, focal findings in another type of neoplasm such as astrocytoma or ependymoma are not sufficient to classify it as astroblastoma. [3, 7, 20,] To establish the glial nature of this tumor, immunohistochemical studies showed variable but strong positivity for GFAP, especially perivascular, and more uniform positivity for vimentin and S-100 protein. The generally observed positivity for neuron-specific enolase (NSE) and cytokeratin was less marked, while reactivity for epithelial membrane antigen (EMA) was minimal. [3, 11 ,12, 21]. High-grade lesions sometimes present clusters of tumor cells extending marginally into the surrounding brain, making it difficult to report cases of diffuse infiltration of surrounding tissue. Other immunostains, such as NSE, EMA, CK and CAM 5.2, tested on this tumor, have given highly variable results results in the current literature, and have failed to characterize to characterize astroblastomas histologically. [20, 3, 11, 13, 12, 21]. Certainly, there is still controversy in the literature as to the cell of origin of astroblastoma. However, the recent literature on this tumor has highlighted several characteristics of this lesion that differentiate it from astrocytoma and ependymoma. La combinaison des caractéristiques radiologiques et histopathologiques. De cette tumeur est nécessaire pour poser le diagnostic d'astroblastome. This article takes into account the rarity of this tumor and the fact that astroblastoma is often unrecognized and can pose a diagnostic problem. Moreover, little is currently known about its histogenesis, therapeutic modalities and prognostic factors.

3. Conclusion

Astroblastoma is a rare tumor that occurs mainly in children and young adults, and often goes undetected at the clinical or radiological stage because of its non-specific appearance. Diagnosis is based on histological examination. Given its rarity, there is currently little data available to ensure optimal management and predict its evolution. Nevertheless, surgery remains the treatment of choice. Radiotherapy plays a very important role in adjuvant treatment. However, the need for and benefits of adjuvant chemotherapy are not well defined.

Compliance with ethical standards

Disclosure of Conflict of interest

The authors declare there is no conflict of interest with this work.

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